

## **Executive Summary:**

### **Solid Waste Management Program Analysis and Recommendations for Silver City, New Mexico**

The Executive Summary (ES) presents the main observations, conclusions, and recommendations resulting from the evaluation of the Town of Silver City's solid waste program.

#### **1 Solid Waste in Silver City – Facts and Figures**

<b>A /</b> Number of residential customers (single – family homes)	3,337
<b>B /</b> Number of commercial customers (businesses, institutions, government offices & buildings, apartment buildings)	526
<b>C /</b> Tons of waste disposed in 2004	8,995 (32% of total tons disposed at Southwest Regional Landfill)
<b>D /</b> Tons collected by Sanitation Division, 2004	6,292 (70% of total disposed tons from Town)
<b>E /</b> Tons self – hauled by residents	2,213
<b>F /</b> Commercial accounts with dumpsters	170
<b>G /</b> Total number of commercial dumpsters	206
<b>H /</b> Number of commercial accounts serviced more than once per week	234
<b>I /</b> Refuse collection schedule	20 routes covered Monday to Saturday
<b>J /</b> Refuse collection equipment	six trucks, two are 15 years old, four are 9 years old
<b>K /</b> Sanitation Division operations personnel	8 total – 7 drivers / collectors plus 1 supervisor

#### **2 – Key Issues, Concerns, Problems**

- The age and poor condition of the collection vehicles.
- The lack of standardized containers throughout the residential and commercial sectors.
- The reliance on manual methods of picking up and placing refuse into the collection vehicles.

- The amount of time spent servicing each account on the routes.
- Reduced effectiveness of compaction units in trucks, leading to smaller payloads and more trips to the landfill.
- Operations personnel exclusively dedicated to refuse collection.
- Sanitation Division cannot provide other needed and desired services.

In conclusion, the existing solid waste management program is highly inefficient. Addressing this situation will require the Town to consider capital investments in new equipment; baseline, uniform standards of service; and a redefinition of the solid waste program roles / responsibilities of the Town and its customers.

### **3 – Goals Guiding Analysis of Solid Waste Program**

- Upgrade, modernize refuse collection equipment
- Increase efficiency of operations
- Maximize productivity of personnel
- Expand types of services offered
- Control rates
- Provide better working conditions
- Contribute to higher quality living and business environment in the Town

#### **4 – Objective Measures for Improving Operational Efficiency**

- Increase truck capacity and effectiveness of refuse compaction
- Increase use of standardized containers
- Reduce need for special maneuvering to pick up trash
- Eliminate Saturday refuse pickup
- Reduce number of employees dedicated to refuse collection
- Increase availability of personnel for other solid waste services such as large / bulky item collection, regular litter patrols and clean – ups, and periodic neighborhood beautification projects
- Reduce time needed to service each collection stop
- Increase size of routes
- Decrease number of routes
- Reduce time needed to complete routes
- Reduce number of trips to landfill
- Decrease number of commercial accounts needing service more than once per week

## 5 – Basic Program Options / Scenarios

### Option / Scenario 1 – Improved Current Program

- Replace existing collection truck fleet
- Maintain manual waste handling methods

### Option / Scenario 2 – Modified New Program

- Automated residential refuse collection
- Semi – automated and manual commercial refuse collection with rear – loading trucks

### Option / Scenario 3 – Significantly New Program

- Automated residential refuse collection
- Automated commercial refuse collection with front – loading trucks

## 6 – Recommended Solid Waste System Option / Scenario

### Option / Scenario 3 – Significantly New Program (see Figures ES-1, ES-2)

- Fully automated residential refuse collection (two new trucks).
- Fully automated commercial refuse collection with front – loading trucks for most accounts (one new truck, one used truck less than five years old).
- Historic Downtown District to be serviced with semi – automated approach using carts and side – loading residential truck.
- All refuse must be placed in containers provided and owned by Town.
- Carts distributed to residences – standard size is 65 – gallon capacity.
- Dumpsters and carts (Historic Downtown District) for businesses based on waste audit results.
- Carts, dumpsters to be placed in convenient, accessible locations as designated.
- Extensive public communication / outreach is essential.
- Will yield best results regarding increased operating efficiencies, higher labor productivity, better working conditions, and more positive employee morale.
- Ability of Sanitation Division to implement other services will be greatly improved.
- Highest capital expenditures. Initial capital outlay estimate is presented in the table below.

**Table ES – 1: Option / Scenario 3 – Estimated Equipment Costs**

Equipment	Quantity	Cost per Unit	Total Cost
Residential Carts – 35, 65, & 95 gallon capacity	4,200	\$ 45 to 55	\$ 203,600
Commercial Dumpsters – 1 to 6 cubic yards in capacity	425	\$ 320 to 630	\$ 176,000
Automated Residential Trucks – 25 to 32 & 12 to 15 cubic yard capacity	2	\$ 175,000	\$ 350,000
Front – Load Commercial Trucks – 30 to 35 cubic yard capacity	2	\$ 150,000 (new) & 75,000 (used)	\$ 225,000
Lift Truck – for container distribution & bulky waste pickup	1	\$ 45,000	\$ 45,000
<b>Total Cost</b>			<b>\$ 999,600</b>

**Figure ES – 1:  
Recommended Residential Waste Management System**



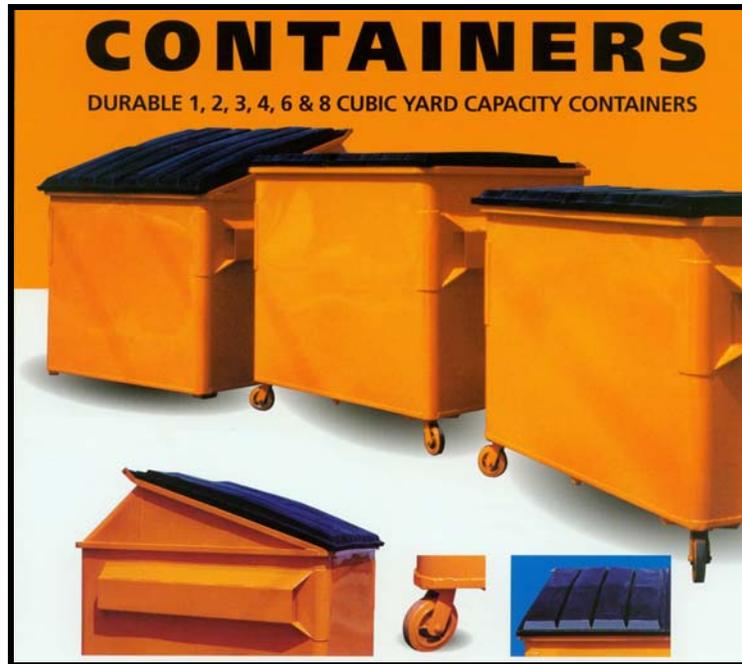
**Residential Refuse Carts**



**Automated, Side-Loading  
Residential Refuse Trucks**



## Figure ES – 2: Recommended Commercial Waste Management System



**Commercial Refuse Dumpsters**



**Automated, Front-Loading  
Commercial Refuse Trucks**



## 7 – Purchase of Equipment

The Town has approximately \$600,000 set aside for the acquisition of solid waste equipment. Instead of using this money for outright cash purchases of trucks and containers it is recommended that a low interest loan be secured for obtaining the necessary equipment. Such equipment qualifies for loans available through the State of New Mexico's Public Project Revolving Fund (PPRF). The \$600,000 would be used to pay off the loan. This method of financing allows the Town to preserve its cash position and borrow the nearly \$1 million needed for refuse trucks and containers. Based on present conditions, the interest rate on a 7 – year note would be about 4% resulting in annual payments of around \$160,000. However, this deduction from the Town's capital fund of \$600,000 is partially offset by fees for refuse containers captured through the rates. These fees total \$76,000 annually. The net drawdown is therefore \$84,000. Thus over a 7 – year period the Town's fund balance is as follows:

- 2005 – 2006: Present balance of \$600,000, minus  
\$84,000 annually after this point
  
- 2006 – 2007: \$516,000
- 2007 – 2008: \$432,000
- 2008 – 2009: \$348,000
- 2009 – 2010: \$264,000
- 2010 – 2011: \$180,000
- 2011 – 2012: \$ 96,000
- 2012 – 2013: \$ 12,000

Table ES – 2 also portrays the factors related to paying for a loan from the PPRF.

**Table ES – 2: Payment Schedule for State Loan**

	<b>Year</b>							
	<b>2005-6</b>	<b>2006-7</b>	<b>2007-8</b>	<b>2008-9</b>	<b>2009-10</b>	<b>2010-11</b>	<b>2011-12</b>	<b>2012-13</b>
Beginning Fund Balance (less PPRF note) plus container fees	600,000	600,000 (160,000)	516,000 (160,000)	432,000 (160,000)	348,000 (160,000)	264,000 (160,000)	180,000 (160,000)	96,000 (160,000)
<b>Ending Fund Balance</b>		76,000	76,000	76,000	76,000	76,000	76,000	76,000
		\$516,000	\$432,000	\$348,000	\$264,000	\$180,000	\$96,000	\$12,000

**Assumptions:**

- a/ Total value of the note is \$999,600
- b/ Projected interest rate on the note from the PPRF is 4%
- c/ Payments are made at the beginning of the period
- d/ Annual cart rental revenue is \$40,800 (4,000 carts x \$0.85 per month x 12 months)
- e/ Annual dumpster rental revenue is \$35,200 (\$176,000 projected container cost divided by 5 years)

## 8 – Service Rates

### 8.1 Residential Sector Rates

Single – family residences currently pay \$12.92 per month for weekly refuse collection. The \$12.92 rate is made up of \$7.87 for the actual trash pickup service and a uniform fee for all households of \$5.05 that covers disposal of the waste at the Southwest Regional Landfill operated by the Southwest Solid Waste Authority. Under the new fully automated garbage collection system for single – family residences, the collection service portion of the overall monthly rate will remain unchanged from the current charge of \$7.87 per month. The disposal portion of the rate, now at \$5.05 per month, will be adjusted depending on the size of roller cart selected by each resident. Base level service will be the 65 – gallon cart. Those residential customers subscribing to the 65 – gallon cart service level will see an increase of \$0.85 per month from their current rate. Customers who utilize the smaller 35 – gallon roller cart will see a decrease in their bill of \$0.40 per month due to the reduction of waste set out for collection. Customers who need greater capacity than the 65 gallons a week can choose the 95 – gallon roller cart. These customers will see an increase of \$2.15 per month. A five – year payment schedule for the carts is planned. The table below details the components of the proposed residential rate structure (assuming one cart per household) based on the following formula:

**Total Monthly Residential Rate =**

**Disposal Fee (variable) + Cart Fee (variable) + Service Fee (\$7.87 / month)**

**Table ES – 3: Proposed Initial Residential Rate Structure  
(\$ per Month)**

<b>Roller Cart Volume</b>	<b>Disposal Fee</b>	<b>Roller Cart Fee</b>	<b>Service Fee</b>	<b>NEW FULL RATE</b>	<b>OLD FULL RATE</b>
35 gallon	\$ 3.85	\$ 0.80	\$7.87	\$12.52	\$12.92
<b>65 gallon</b>	<b>\$ 5.05</b>	<b>\$ 0.85</b>	<b>\$7.87</b>	<b>\$13.77</b>	<b>\$12.92</b>
95 gallon	\$ 6.25	\$ 0.95	\$7.87	\$15.07	\$12.92

## 8.2 Commercial Sector Rates

**Total Monthly Commercial Rate =**

**Disposal Fee (variable) + Dumpster Fee (variable) + Service Fee (variable)**

**Where,**

- **Disposal Fee is based on amount of refuse collected**
- **Dumpster Fee is based on size and number of dumpsters used**
- **Service Fee is based on amount of refuse collected and collection frequency per week**

However, the disposal fee and service fee portions of the rate – that is, the cost per collected cubic yard – cannot be calculated until waste audits for all commercial accounts have been completed and the entire Town has been converted to the front – load container system. The audits will determine the dumpster size (that is, the capacity or volume in cubic yards) that is most suitable for an account, along with the number of dumpsters, their location, and the frequency of collection per week. The cost of service delivery is based on the distribution of these factors (dumpster size, number, and collection frequency) across all the accounts and the labor time needed to pick up refuse at each “stop” or account.

As noted in the formula above, also included in the overall rate is the cost of the container. Monthly fees for the container will depend on the size and number of the container(s) at each generator – the larger the container, the higher the monthly rate. A five – year payment schedule for the dumpsters is planned. The table below details the projected monthly cost of the container based on its purchase price, assuming a business has one dumpster:

**Table ES – 4: Monthly Cost of Commercial Dumpsters**

<b>Container Volume</b>	<b>Container Costs</b>	<b>Container Fee / Month</b>
1 cu. yard	\$ 320	\$ 5.35
1.5 cu. yards	\$ 376	\$ 6.25
2 cu. yards	\$ 396	\$ 6.60
3 cu. yards	\$ 476	\$ 7.95
4 cu. yards	\$ 543	\$ 9.05
6 cu. yards	\$ 630	\$ 10.50

**8.3 Rates for Businesses in Downtown Historic District**

Businesses in the Downtown Historic District will use 95 – gallon carts for refuse storage. The carts will be serviced using a residential automated collection vehicle with a two – person crew. These businesses would also receive a site visit / waste audit to determine how many carts they need and what the collection frequency should be. If a business in this area uses one 95 – gallon cart that is emptied weekly their monthly rate would be the same as for a single – family residence, noted below:

<b>Roller Cart Volume</b>	<b>Disposal Fee</b>	<b>Roller Cart Fee</b>	<b>Service Fee</b>	<b>FULL RATE</b>
(1) 95 gal. capacity	\$ 6.25 per mo.	\$ 0.95 per mo.	\$7.87 per mo.	\$15.07 per mo.

If a cart is emptied twice weekly an additional service fee charge is added into the rate along with an additional disposal fee charge. Since the initial service fee charge includes recycling pickup from the Southwest Solid Waste Authority, additional service fees would be reduced by the amount that is allocated for recycling. If more than one cart is used the monthly rate increases by the cart fee plus the disposal fee and service fee according to the number of times per week the carts are collected.